

WHAT IS CLAIMED IS:

1. A delivery vehicle comprising:
 - a) a first polymeric molecule having a net positive or negative charge,
 - b) at least one second polymeric molecule having a net charge opposite
5 that of said first polymeric molecule and complexed with said first
polymeric molecule, said second polymeric molecule having attached
thereto at least one cell targeting moiety, and
 - c) at least one physiological agent attached to said first or second
polymeric molecule or to a third polymeric molecule, wherein said third
10 polymeric molecule, if present, has a net charge opposite that of said
first polymeric molecule and is complexed with said first polymeric
molecule.
2. A delivery vehicle according to claim 1 wherein said first polymeric molecule
comprises a nucleic acid.
- 15 3. A delivery vehicle according to claim 2 wherein said nucleic acid is DNA.
4. A delivery vehicle according to claim 3 wherein said DNA encodes a polypeptide.
5. A delivery vehicle according to claim 3 wherein said polypeptide is herpes thymidine
kinase protein.
6. A delivery vehicle according to claim 2 wherein said second polymeric molecule
20 comprises a polyamine.
7. A delivery vehicle according to claim 6 wherein said third polymeric molecule is
present and comprises a polyamine.
8. A delivery vehicle according to claim 6 wherein said second polymeric molecule is
selected from the group consisting of polylysine and spermidine.

9. A delivery vehicle according to claim 7 wherein said second polymeric molecule comprises polylysine or spermidine and said third polymeric molecule comprises polylysine or spermidine.
10. A delivery vehicle according to claim 1 wherein said physiological agent comprises
5 a contrast agent.
11. A delivery vehicle according to claim 10 wherein said contrast agent comprises a paramagnetic ion complexed with a chelator.
12. A delivery vehicle according to claim 11 wherein said paramagnetic ion is gadolinium.
- 10 13. A delivery vehicle according to claim 12 wherein said chelator comprises diethylenetriaminepentaacetic acid (DTPA) or 1,4,7,10-tetraazacyclo-dodecane-N,N',N'',N''' tetracetic acid (DOTA).
14. A delivery vehicle according to claim 1 wherein said physiological agent is a therapeutic agent.
- 15 15. A delivery vehicle according to claim 14 wherein said therapeutic agent is a selected from the group consisting of phototherapeutic agents and anti-cancer agents.
16. A method of delivering a nucleic acid to a cell comprising:
- (a) contacting said cell with a nucleic acid delivery vehicle comprising:
- 20 i) a nucleic acid,
ii) at least one first polycationic molecule complexed with said nucleic acid, said first polycationic molecule having attached thereto at least one cell targeting moiety for a surface receptor on said cell, and
iii) at least one contrast agent attached to said first polycationic molecule or to a second polycationic molecule, wherein said second

polycationic molecule, if present, is complexed with said nucleic acid,
and

(b) detecting the presence of said contrast agent in said cell as an indication of
whether said nucleic acid has been delivered to said cell.

5 17. A method of delivering physiological agents to a cell comprising:

a) contacting said cell with a delivery vehicle comprising:

i) a first polymeric molecule having a net positive or negative charge,

10 ii) at least one second polymeric molecule having a net charge opposite
that of said first polymeric molecule and complexed with said first
polymeric molecule, said second polymeric molecule having attached
thereto at least one cell targeting moiety for a surface receptor on said
cell, and

15 iii) at least one physiological agent attached to said first or second
polymeric molecule or to a third polymeric molecule, wherein said third
polymeric molecule, if present, has a net charge opposite that of said
first polymeric molecule and is complexed with said first polymeric
molecule; and

b) detecting the presence of said physiological agent in said cell as an indication
of whether said physiological agent has been delivered to said cell.

20 18. A method according to claim 17 wherein said physiological agent is a contrast
agent.

19. A method according to claim 17 wherein said physiological agent is a therapeutic
agent.

20. A method according to claim 17 wherein said delivery vehicles comprise at least
25 one contrast agent and at least one therapeutic agent.

21. A method according to claim 18 or 20 wherein said detection is by magnetic
resonance imaging (MRI).

22. A delivery vehicle comprising:

a) a first polymeric molecule having a net positive charge and having hydrophobic residues that facilitate cellular uptake of said delivery vehicle,

b) a second polymeric molecule having a net negative charge and complexed
5 with said first polymeric molecule, and

c) at least one physiological agent attached to said first or second polymeric molecule.